IN THE CLAIMS

Please amend the claims as follows:

Claim l-4 (canceled)

Claim 5 (currently amended): A method of operating said light-receiving device according to claim 33, said light-receiving device comprising:

a plurality of partial quantum-wave interference layer I_k with T_k periods of a pair of said first layer and said second layer being displaced in series by varying k as 1, 2, ..., and

wherein index k of said plurality of said partial quantum-wave interference layers correspond to index k of kinetic energy level E_k and said first and second layers have thicknesses of $n_{Wk}\lambda_{Wk}/4$, and $n_{Bk}\, k_{Bk}/4$, respectively, where E_k+V and E_k, λ_{Wk} and k_{Bk} , and n_{Wk}, n_{Bk} represent kinetic energy level of carriers flowing into respective said first layer and said second layer, wavelength of quantum-wave of carriers flowing into respective said first layer and said second layer, and even numbers, respectively, and λ_{Wk} and λ_{Bk} are determined by functions of E_k+V and E_k, respectively.

Claim 6 (canceled)

Claim 7 (currently amended): A method of operating said light-receiving device according to claim 33, wherein said carrier accumulation layer has the same bandgap as that of said first layer.

Claim 8 (canceled)

Claim 9 (currently amended): A method of operating said light-receiving device according to claim ~~5~~ 33, wherein said carrier accumulation layer has the same bandgap as that of said first layer.

Claims 10-11 (canceled)

Claim 12 (currently amended): A method of operating said light-receiving device according to claim ~~9~~ 33, wherein said carrier accumulation layer is formed to have a thickness same as said quantum-wave wavelength λ_W.

Claim 13 (currently amended): A method of operating said light-receiving device according to claim 33, wherein a δ layer is formed between said first layer and said second layer, said δ layer is substantially thinner than said first layer and said second layer, and sharply varies an energy band.

Claims 14-18 (canceled)

Claim 19 (currently amended): A method of operating said light-receiving device according to claim ~~5~~ 33, said light-receiving device further comprising:

a pin junction structure; and

wherein said quantum-wave interference layer units and said carrier accumulation layer are formed in an i-layer.

Claims 20-21 (canceled)

Claim 22 (currently amended): A method of operating said light-receiving device according to claim 33, wherein said quantum-wave interference layer units and said carrier accumulation layer are formed in ~~an~~ said n-layer or ~~a~~ said p-layer.

Claims 23-26 (canceled)

Claim 27 (currently amended): A method of operating said light-receiving device according to claim 22, said light-receiving device further comprising a pn junction structure.

Claim 28 (canceled)

Claim 29 (currently amended): A method of operating said light-receiving device according to claim ~~24~~ 33, said light-receiving device further comprising a pn junction structure.

Claims 30-32 (canceled)

Claim 33 (currently amended): A method of operating a light-receiving device which converts an incident light into an electric current, said light-receiving device comprising:

an n-layer with n conduction type;

a p-layer with p conduction type; ~~and~~

an intermediate layer;

~~said intermediate layer comprising,~~

quantum-wave interference layer units having plural periods of a pair of a first layer and a second layer, said second layer having a wider band gap than said first layer; and

a carrier accumulation layer disposed between adjacent two of said quantum-wave interference layer units and electrons and holes being excited by incident light in said carrier accumulation layer; and

wherein each thickness of said first and said second layers is determined by multiplying by an even number one fourth of quantum-wave wavelength of carriers in each of said first and said second layers and said carrier accumulation layer has a band gap narrower than that of said second layer~~, and said p-layer is applied with a positive voltage against said n-layer and excited electrons are flowed to said p-layer and excited holes are flowed to said n-layer~~, a kinetic energy of said carriers which determines said quantum-wave wavelength is set at a level near the bottom of a conduction band ~~and~~ or a valence band of said second layer, according to the case that said carriers are electrons ~~and~~ or holes, respectively, and a quantum-wave wavelength λ_W in said first layer is determined by a formula $\lambda_W = h/[2m_W(E+V)]^{1/2}$, a quantum-wave wavelength λ_B in said second layer is determined by a formula $\lambda_B = h/(2m_BE)^{1/2}$, said thickness of said first layer D_W is determined by a formula $D_W = n_W \lambda_W/4$, and said second layer D_B is determined by a formula $D_B = n_B\lambda_B/4$, where h,

m_W, m_B, E, V, and n_W and n_B represent Plank's constant, effective mass of said carrier in said first layer, effective mass of said carrier in said second layer, kinetic energy of carriers flowing into said second layer, potential energy of said second layer to said first layer, and even numbers, respectively,

wherein said method of operating said light-receiving device comprises forward biasing said light-receiving device by applying a positive voltage to said p-layer such that carriers having said wavelength λ_W are produced in said quantum-wave interference layer units.

Claims 34-36 (canceled)

Claim 37 (New) A method of operating said light-receiving device according to Claim 33, wherein excited electrons flow to said p-layer.

Claim 38 (New) A method of operating said light-receiving device according to Claim 33, wherein excited holes flow to said n-layer.

Claim 39 (New) A method of operating said light-receiving device according to Claim 33, wherein said quantum-wave interference layer units and said carrier accumulation layer are positioned in said intermediate layer.